

PATENT SPECIFICATION

NO DRAWINGS

1,098,876

1,098,876



Date of filing Complete Specification (under Section 3 (3) of the Patents Act 1949): Feb. 24, 1966.

Application Date Feb. 24, 1965.

No. 8036/65.

Application Date Feb. 16, 1966,

No. 6721/66.

Complete Specification Published: Jan. 10, 1968.

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Index at acceptance: —F1 C(2L, 2M); B2 P(10B3, 10C3B5)

Int. Cl.: —B 04 b 15/00, F 04 d 7/02

COMPLETE SPECIFICATION

Improvements in Centrifugal Pumps, Centrifugal Separators and other Centrifugal Machines

SPECIFICATION NO. 1,098,876

By a direction given under Section 17 (1) of the Patents Act 1949 this application proceeded in the name of V. BRAMMAR (PLASTICS) LIMITED, a British Company of 119, Psalter Lane, Sheffield 11, Yorkshire.

THE PATENT OFFICE

D 104382/12

dry or in slurry form, and in order the plant used has had to be shut down at frequent intervals to remedy the damage caused by impact, abrasion and corrosion to the ferrous working surfaces of centrifugal pumps, separators and the like when dealing with such materials as "fines", "tailings" and magnetite.

The object of the present invention is to enable centrifugal machines to be provided, in a relatively inexpensive manner, with working surfaces having a vastly higher resistance to abrasion than has been obtainable hitherto.

According to this invention, the working surfaces of a centrifugal pump, centrifugal separator or other centrifugal machine have trowelled over them a coating of epoxy resin admixed with a wear-resistant aggregate.

This epoxy resin/aggregate composition may be applied overall to existing ferrous or rigid synthetic plastics surfaces, or used to make good scoring or other damage sustained by existing components already coated as aforesaid.

In applying the invention to an existing machine, a layer of the wear-resistant composition, whose thickness depends upon the expected rate of wear but is usually some

any abrasion of the coated surface which may eventually occur can readily be made good by relining with the same composition, so that any given part can be kept in service almost indefinitely.

An alternative, if somewhat more expensive method of utilizing the desirable properties of the epoxy resin/aggregate composition is to apply the latter as an overall coating (say, 1 inch to 1½ inches thick) to the surfaces of components moulded in a rigid synthetic plastics material.

For example, in the case of a centrifugal pump, both the casing and the impeller may be vacuum-formed in nylon, acrylonitrile butadiene-styrene, or other suitable plastics material to which the coating can be effectively bonded by means of epoxy resin.

A centrifugal pump so constructed will obviously be very much lighter and cheaper to produce than a conventional metal pump, and any eventual abrasion of its highly-resistant working surfaces can readily be made good by relining with the epoxy resin/aggregate composition as previously mentioned.

In the case of a centrifugal separator, the working surfaces, normally of cast-steel, may be moulded in acrylonitrile butadiene-styrene,

[Price 4s. 6d.]

SPECIFICATION AND INDEX . SEE ATTACHED SLIP

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COMPLETE SPECIFICATION

Improvements in Centrifugal Pumps, Centrifugal Separators and other Centrifugal Machines

I, VINCENT BRAMMAR, a British Subject, of 7, Broomgrove Road, Sheffield, 10, in the County of York, do hereby declare the invention, for which I pray that a patent may be granted to me, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to centrifugal machines, such as pumps and separators, used for handling abrasive materials.

Such materials are chiefly met with in the treatment of coal and other minerals, whether dry or in slurry form, and hitherto the plant used has had to be shut down at frequent intervals to remedy the damage caused by impact, abrasion and corrosion to the ferrous working surfaces of centrifugal pumps, separators and the like when dealing with such materials as "fines", "tailings" and magnetite.

The object of the present invention is to enable centrifugal machines to be provided, in a relatively inexpensive manner, with working surfaces having a vastly higher resistance to abrasion than has been obtainable hitherto.

According to this invention, the working surfaces of a centrifugal pump, centrifugal separator or other centrifugal machine have trowelled over them a coating of epoxy resin admixed with a wear-resistant aggregate.

This epoxy resin/aggregate composition may be applied overall to existing ferrous or rigid synthetic plastics surfaces, or used to make good scoring or other damage sustained by existing components already coated as aforesaid.

In applying the invention to an existing machine, a layer of the wear-resistant composition, whose thickness depends upon the expected rate of wear but is usually some

3/16 to 1/4. inch, is trowelled over the whole of the steel or other ferrous surfaces to be protected.

It is found that, provided such a surface has been thoroughly cleaned beforehand, the resin/aggregate coating will bond thereto so securely as to be virtually irremovable otherwise than by burning off with an oxyacetylene flame.

If the treated surface is already worn, it can readily be built up as necessary by applying a thicker coating to the most seriously affected parts, and it will be appreciated that any abrasion of the coated surface which may eventually occur can readily be made good by relining with the same composition, so that any given part can be kept in service almost indefinitely.

An alternative, if somewhat more expensive method of utilizing the desirable properties of the epoxy resin/aggregate composition is to apply the latter as an overall coating (say, 1 inch to 1½ inches thick) to the surfaces of components moulded in a rigid synthetic plastics material.

For example, in the case of a centrifugal pump, both the casing and the impeller may be vacuum-formed in nylon, acrylonitrile butadiene-styrene, or other suitable plastics material to which the coating can be effectively bonded by means of epoxy resin.

A centrifugal pump so constructed will obviously be very much lighter and cheaper to produce than a conventional metal pump, and any eventual abrasion of its highly-resistant working surfaces can readily be made good by relining with the epoxy resin/aggregate composition as previously mentioned.

In the case of a centrifugal separator, the working surfaces, normally of cast-steel, may be moulded in acrylonitrile butadiene-styrene,

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the coating composition being made of appropriate consistency and trowelled over such surfaces, a method which permits of any worn areas being readily rebuilt.

- 5 I am aware that it has previously been proposed to apply a protective coating to articles exposed to corrosive or erosive action, by spraying onto them with a flame-gun at least one metallic oxide which has been
- 10 agglomerated with a thermoplastic or fusible resin (for example, the epoxy resin known under the registered Trade Mark ARAL-DITE) forming a binder for the oxide powder.

15 WHAT I CLAIM IS:—

1. A centrifugal pump, centrifugal separator or other centrifugal machine whose working surfaces have trowelled over them a coating of epoxy resin admixed with a wear-resistant aggregate.
- 20 2. A centrifugal machine according to

Claim 1, further characterised in that the epoxy resin/aggregate composition is applied overall to an existing ferrous surface.

3. A centrifugal machine according to Claim 1, whose working surfaces are moulded in a rigid synthetic plastics material and coated overall with the epoxy resin/aggregate composition. 25

4. A centrifugal machine according to any one of the preceding Claims further characterised in that the coating is applied to make good damage sustained by a working surface, formed of the resin/aggregate composition. 30

5. A centrifugal machine according to Claim 1, substantially as herein described. 35

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DERWENT-ACC-NO: 1968-97970P

DERWENT-WEEK: 196800

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TITLE: Protective coating in centrifugal machines such as pumps or separators, is proved by trowelling on to the working surfaces a 3/16-1/4" layer of epoxy resin mixe

PATENT-ASSIGNEE: BAMMAR V[BRMM]

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE
GB 1098876 A		EN

INT-CL-CURRENT:

TYPE	IPC DATE
CIPS	B04B7/08 20060101
CIPS	F04D29/02 20060101
CIPS	F04D7/04 20060101

ABSTRACTED-PUB-NO: GB 1098876 A

BASIC-ABSTRACT:

Protective coating in centrifugal machines such as pumps or separators, is proved by trowelling on to the working surfaces a 3/16-1/4" layer of epoxy resin mixed with a wear-resisting-aggregate/.

The surfaces may be of steel or iron or may be moulded in synthetic plastics (e.g. nylon, ABS) and the same mixture applied thickly (up to

1 1/2").

TITLE-TERMS: PROTECT COATING CENTRIFUGE MACHINE
PUMP SEPARATE PROVE TROWEL WORK
SURFACE LAYER EPOXY RESIN

DERWENT-CLASS: A00

CPI-CODES: A05-A01E; A12-B; A12-H03;

POLYMER-MULTIPUNCH-CODES-AND-KEY-SERIALS:

Multipunch Codes: 034 055 056 072 074 076 117 122 141 204
226 308 310 336 443 445 456 459 460 477
623 629 720 721 723